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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,453	12/27/2001	Hirofumi Ishii	KIN56USA	9323

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EXAMINER

HUG, ERIC J

ART UNIT	PAPER NUMBER
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1731

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DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 10/034,453

Applicant(s) ISHII ET AL.

Examiner

Art Unit

Eric Hug

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5,6,9,15 and 16 is/are allowed.
- 6) ☒ Claim(s) 1-4,7,8 and 10-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 3, 10, 11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Muellner et al (DE 196 51 557 A1). Muellner discloses a press belt comprising a supporting base (15, 16) a polymer matrix making up the main body (12), and web side surface (17) with grooves (18) and a coating (20) enclosing the entire surface. The coating may be a hydrophobic material. The coating is applied after the production of the belt, which means that the coating is applied after formation of the grooves, thereby rendering the surfaces of the grooves hydrophobic as well as the web side surface. This is confirmed in column 2, lines 38-44, the translation being:

"The press belt **10** is reciprocally provided with a surface coating **20**. This coating **20** can extend on the exterior **17** also into the blind drillings **18**, in order to seal the matrix material full-laminar against the effect of chemical means. In addition, thereby the connection between the surface coating and the matrix material can be improved."

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2. Claims 1, 7, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 63-159591, which discloses a press belt with a polyurethane rubber layer on the web facing surface. The rubber layer also comprises hydrophobic material (20% polybutadiene) to facilitate web separation. The polymer layer is hardened and polished (equivalent to grinding).
3. Claims 1, 7, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Davenport et al (US 6,136,151). Davenport discloses a press belt comprising a resin coated web-facing surface having hydrophobic portions (the resin) and hydrophilic portions (exposed mineral filler). When designed for a long press nip arrangement (Figure 4) the belt is coated on both sides and smoothed (ground) to a desired finish.
4. Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Gstrein (US 6,383,339). Gstrein discloses a transfer belt of an extended nip press having a polymer layer on both sides of a woven support base. Possible polymer materials include polyolefins, which are hydrophobic. The polymer layer is to prevent "carrying along" of water. See column 2, lines 1-6. Therefore, the belt is hydrophobic.
5. Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Best (US 2002/0060052, pre-grant publication). Best discloses a shoe press belt having a polyurethane web-facing surface rendered hydrophobic by inclusion of fluorocarbon chains. See paragraph [0013].

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 4, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muellner et al (DE 196 51 557 A1) in view of the tables of polymer surface tensions/surface free energies. Muellner discloses the press belt described above having a hydrophobic coated surface. The degree of hydrophobicity is not expressly disclosed. Muellner discloses making the polymeric matrix material of the belt from polyurethane. Polyurethane has a surface free energy of about 38 (dynes/cm) according to the tables. To render a polyurethane material more hydrophobic, one would have to impart a material of lower free energy. Therefore, at the time of the invention, it would have been obvious to one skilled in the art to render the belt of Muellner hydrophobic by using a coating material with a surface energy less of less than 38. One skilled in the art would recognize that such a low surface energy coating material would result in a water contact angle being substantially larger than 50 degrees (NOTE: surface tension of water is 72 dynes/cm).

7. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gstrein (US 6,383,339) in view of the tables of polymer surface tensions/surface free energies. Gstrein discloses a transfer belt of an extended nip press having a hydrophobic polymer layer on both

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sides of a woven support base. Possible polymer materials include polyolefins. Although Gstrein does not expressly disclose the type of polyolefin or the contact angle of water with the polymer, the tables shows that polyolefins such as polyethylene and polypropylene have a surface tension between 29-31. Therefore, at the time of the invention, it would have been obvious to one skilled in the art that a polyolefin polymer has a surface tension of 31 or lower, and that such a low surface tension will provide a water contact angle of at least 50 degrees.

8. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Best (US 2002/0060052 A1, pre-grant publication) in view of the tables of polymer surface tensions/surface free energies. Best discloses a shoe press belt having a polyurethane web-facing surface rendered hydrophobic by inclusion of fluorocarbon chains. Although Best does not expressly disclose the contact angle of water with the fluorocarbon polymer, the tables show the surface free energies of fluoropolymers can range between 18-28. Therefore, at the time of the invention, it would have been obvious to one skilled in the art that a fluorocarbon polymer has a surface tension of below 28, and that such a low surface tension will provide a water contact angle of at least 50 degrees.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davenport et al (US 6,136,151) in view of FitzPatrick et al (US 6,465,074). Davenport discloses a press belt comprising a resin coated web-facing surface having hydrophobic portions. The belt can be used in an extended nip shoe press assembly. Davenport does not expressly show the belt as having grooves or holes. FitzPatrick discloses a similar press belt having a polymer resin

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matrix which is ground to a finish, and then further provided with grooves or holes for temporary storage of water (Figure 4; column 5, lines 55-63). Therefore, at the time of the invention, it would have been obvious to one skilled in the art to modify the hydrophobic resin belt of Davenport to include holes for transporting water away when used in an extended nip shoe press.

Allowable Subject Matter

Claims 5, 6, 9, 15, and 16 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose or suggest a shoe press belt or a method of making a shoe press belt comprising a high molecular weight elastic material having a web facing surface and a water holding section (e.g. grooves) with interior surfaces, whereby the web facing surface is hydrophilic and the interior surfaces of the water holding section are hydrophobic.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kiuchi (US 4,643,916) discloses a press belt having a synthetic resin on the outer (web side) surface and the inner surface ground to the desired thickness, grooves formed on the outer surface, and a Teflon coating provided on the inner surface.

Ashworth (US 4,162,190). Ashworth discloses a paper making felt having a hydrophobic web-facing surface with a critical surface tension of 33 dynes per centimeter. The hydrophobic surface allows for keeping pressed water away from the web and for easily removing the water from the belt before it passes back through the press.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hug whose telephone number is 703 308-1980. The examiner can normally be reached on Monday through Friday, 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 703 308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0651.

Eric Hug

jeh
March 31, 2003

Steven P. Griffin
STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
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